

## TEST REPORT

Test report no.: 1-4254/12-76-19



Deutsche  
 Akkreditierungsstelle  
 D-PL-12076-01-01

### Testing laboratory

**CETECOM ICT Services GmbH**  
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#### Accredited Testing Laboratory:

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS). The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-01  
 Area of Testing: Radio/Satellite Communications

### Applicant

**Sony Mobile Communications AB**  
 Nya Vattentorget  
 22188 Lund / SWEDEN  
 Phone: +46 46 19 30 00  
 Fax: +46 46 19 32 95  
 Contact: Håkan Sjöberg  
 e-mail: [hakan.sjoberg@sonymobile.com](mailto:hakan.sjoberg@sonymobile.com)  
 Phone: +46 46 19 35 59

### Manufacturer

**Sony Mobile Communications AB**  
 Nya Vattentorget  
 22188 Lund / SWEDEN

### Test standard/s

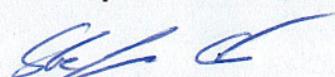
47 CFR Part 15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices
RSS - 210 Issue 8	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

For further applied test standards please refer to section 3 of this test report.

### Test Item

Kind of test item:	Tablet PC GPRS/EGPRS 850/900/1800/1900; UMTS HSPA FDDI/V/VI/XIX; LTE FDD1/19/21; WLAN a/b/g/n; BT 3.1; BT LE; RFID; FM Rx; A-GPS
Model name:	TM-0000-BV
FCC ID:	PY7TM-0000
IC:	4170B-TM0000
Frequency:	13.56 MHz
Technology tested:	RFID
Antenna:	Integrated coil antenna
Power Supply:	3.7 V DC by Li – ION - Battery
Temperature Range:	-20°C to +55 °C

### Test report authorised:

  
 2013-01-18 Stefan Bös  
 Senior Testing Manager

### Test performed:

  
 2013-01-18 Tobias Wittenmeier  
 Expert

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## 2 General information

### 2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

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In no case this test report can be considered as a Letter of Approval.

### 2.2 Application details

Date of receipt of order:	2012-12-14
Date of receipt of test item:	2013-01-01
Start of test:	2013-01-11
End of test:	2013-01-14
Person(s) present during the test:	-/-

## 3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 15	2010-10	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices
RSS - 210 Issue 8	2010-12	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

#### 4 Test environment

Temperature:	$T_{nom}$	+22 °C during room temperature tests
	$T_{max}$	+55 °C during high temperature tests
	$T_{min}$	-20 °C during low temperature tests
Relative humidity content:		55 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	$V_{nom}$	3.7 V DC by Li – ION - Battery
	$V_{max}$	4.4 V
	$V_{min}$	3.3 V

#### 5 Test item

Kind of test item	:	Tablet PC GPRS/EGPRS 850/900/1800/1900; UMTS HSPA FDDI/V/VI/XIX; LTE FDD1/19/21; WLAN a/b/g/n; BT 3.1; BT LE; RFID; FM Rx; A-GPS
Type identification	:	TM-0000-BV
S/N serial number	:	CB5A1MD98W
HW hardware status	:	AP
SW software status	:	10.1.E.0.61
Frequency band [MHz]	:	13.56 MHz
Type of modulation	:	Modulated carrier
Number of channels	:	1
Antenna	:	Integrated coil antenna
Power supply	:	3.7 V DC by Li – ION - Battery
Temperature range	:	-20 °C to +55 °C

#### 6 Test laboratories sub-contracted

None

**7 Summary of measurement results**

- No deviations from the technical specifications were ascertained**
- There were deviations from the technical specifications ascertained

TC Identifier	Description	Verdict	Date	Remark
RF-Testing	CFR Part 15 RSS 210, Issue 8, Annex 2.6	Passed	2013-02-15	-/-

Test Specification Clause	Test Case	Temperature Conditions	Power Source Voltages	Pass	Fail	NA	NP	Remark
§ 15.35 (c)/ RSS-GEN Issue 3	Timing of the transmitter (Duty cycle correction factor)	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
RSS-GEN Issue 3	99 % emission bandwidth	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.225 (a)/ RSS-210 Issue 8 Annex 2.6	Fieldstrength of Fundamental	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.209/ RSS-210 Issue 8 Annex 2.6	Fieldstrength of harmonics and spurious	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.225 (e)/ RSS-210 Issue 8 Annex 2.6	Frequency tolerance	Nominal	Extreme	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
		Extreme	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**Note:** NA = Not Applicable; NP = Not Performed

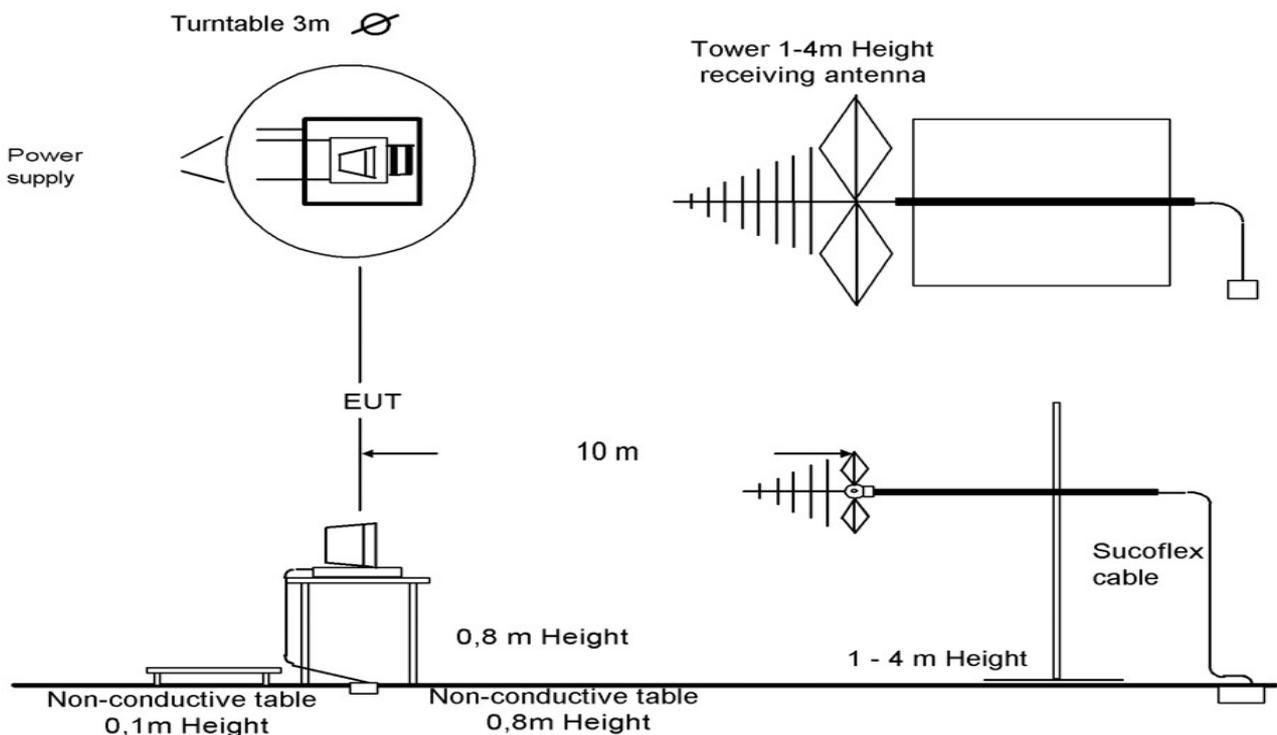
**8 RF measurements**

**8.1 Description of test setup**

**8.1.1 Radiated measurements**

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 25 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2009 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63-4-2009 clause 4.2. Antennas are confirmed with ANSI C63.2-1996 item 15.

Semi anechoic chamber



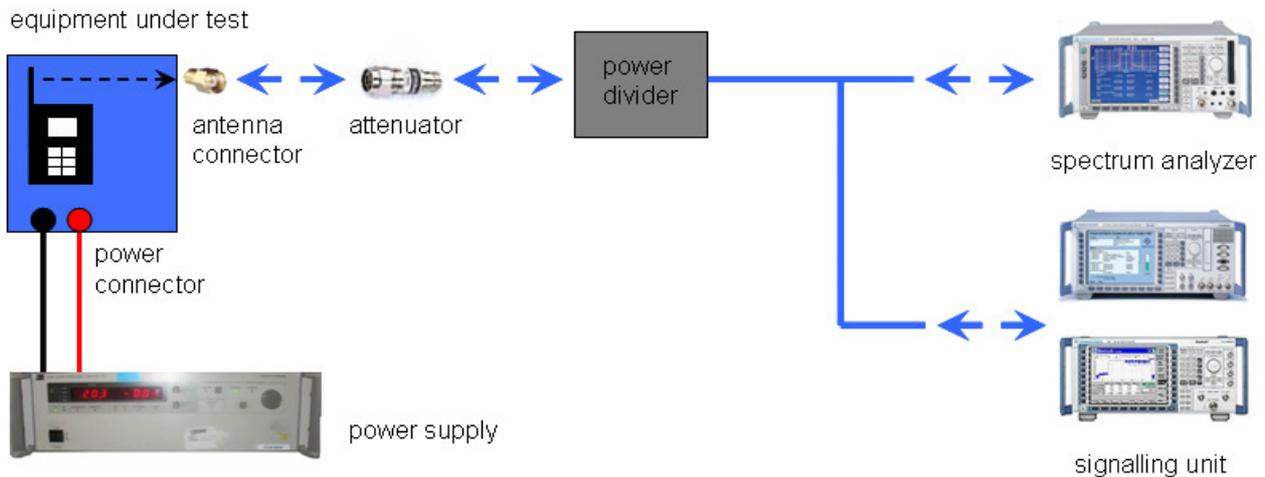
**Picture 1: Diagram radiated measurements**

9 kHz - 30 MHz:	active loop antenna
30 MHz – 1 GHz:	tri-log antenna
> 1 GHz:	horn antenna

The EUT is powered by an external power supply with nominal voltage. The signalling is performed from outside the chamber with a signalling unit (CMU200 or other) by air link using signalling antenna.

### 8.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is first 10dB attenuated before it is power divided (~6dB loss per branch). One of the signal paths is connected to the communication base Station (CMU200 or other), the other one is connected to the spectrum analyzer. The specific losses for both signal paths are first checked within a calibration. The measurement readings on the signalling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signalling unit and the spectrum analyzer are impedance matched on 50 Ohm.



Picture 2: Diagram conducted measurements

### 8.2 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: None

### 8.3 RSP100 test report cover sheet / performance test data

Test Report Number	:	1-4254/12-76-19
Equipment Model Number	:	TM-0000-BV
Certification Number	:	4170B-TM0000
Manufacturer (complete Address)	:	Sony Mobile Communications AB Nya Vattentorget 22188 Lund / SWEDEN
Tested to radio standards specification no.	:	RSS 210, Issue 8
Open Area Test Site IC No.	:	IC 3462C-1
Frequency Range or fixed frequency	:	13.56 MHz
Field Strength [dB $\mu$ V/m] (at which distance)	:	56.5 dB $\mu$ V @ 10m
Occupied bandwidth (99%-BW) [kHz]	:	548.0 kHz
Type of modulation	:	N0N
Emission Designator (TRC-43)	:	548KN0N
Antenna Information	:	Integrated coil antenna
Transmitter Spurious (worst case) [dB $\mu$ V/m @ 10m]	:	27.9 dB $\mu$ V/m @ 30.09 MHz
Receiver Spurious (worst case) [dB $\mu$ V/m @ 10m]	:	No stand alone receiver mode!

#### ATTESTATION:

#### DECLARATION OF COMPLIANCE:

I attest that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

#### Laboratory Manager:

2013-01-18  
Date

Tobias Wittenmeier  
Name

  
Signature

## 9 Measurement results

### 9.1 Timing of the transmitter

**Measurement:**

Measurement parameter	
Detector:	Positive peak
Sweep time:	100 ms
Resolution bandwidth:	100 kHz
Video bandwidth:	300 kHz
Span:	Zero span
Trace-Mode:	Single sweep

**Limits:**

FCC	IC
Timing of the transmitter	
<p>(c) Unless otherwise specified, e.g. Section 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.</p>	

**Duty cycle: 100%**

**Result: [passed](#)**

## 9.2 Field strength of the fundamental

### Measurement:

Measurement parameter	
Detector:	Quasi Peak
Resolution bandwidth:	200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz
Video bandwidth:	≥ RBW
Trace-Mode:	Max Hold

### Limits:

FCC		IC	
Fundamental Frequency (MHz)	Field strength of Fundamental (μV/m / dBμV/m)	Measurement distance (m)	
13.553 to 13.567	15848 μV/m (84 dBμV/m)	30	
	158489 μV/m (104 dBμV/m)	10 (Recalculated acc. to FCC part15.31 (f2))	

### Result:

TEST CONDITIONS		MAXIMUM POWER (dBμV/m)	
Frequency		13.56 MHz	13.56 MHz
Mode		at 10 m distance	at 30 m distance
T <sub>nom</sub>	V <sub>nom</sub>	56.5	36.5*
Measurement uncertainty		±3dB	

\* Limits recalculated from 10m to 30m with 40 dB/decade according to FCC 15.31 (f2).

**Result: passed**

### 9.3 99 % emission bandwidth

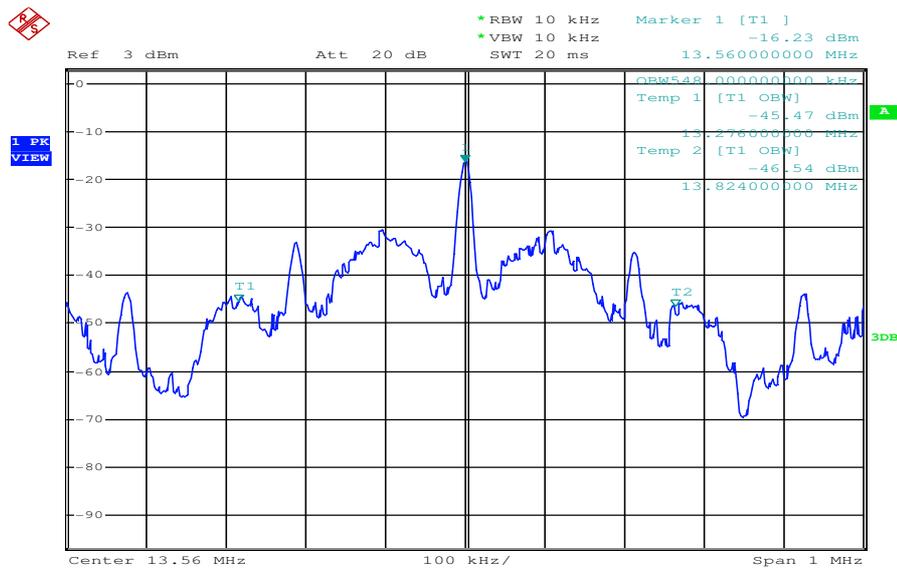
**Measurement:**

For the emission bandwidth the automatic function of the spectrum analyser ESPI was used. The measurement criteria was the emission bandwidth [%].

**Results:**

TEST CONDITIONS		99 % emission bandwidth
Frequency		13.56 MHz
T <sub>nom</sub>	V <sub>nom</sub>	548.0 kHz
Measurement uncertainty		± RBW

**Plot:**



Date: 14.JAN.2013 14:01:29

## 9.4 Field strength of the harmonics and spurious

### Measurement:

Measurement parameter	
Detector:	Quasi Peak / Average
Sweep time:	Auto
Resolution bandwidth:	120 kHz
Video bandwidth:	300 kHz
Span:	See plots!
Trace-Mode:	Max hold

### Limits:

FCC		IC	
Field strength of the harmonics and spurious.			
Frequency (MHz)	Field strength ( $\mu\text{V/m}$ )	Measurement distance (m)	
0.009 – 0.490	2400/F(kHz)	300	
0.490 – 1.705	24000/F(kHz)	30	
1.705 – 30	30 (29.5 dB $\mu\text{V/m}$ )	30	
30 – 88	100 (40 dB $\mu\text{V/m}$ )	3	
88 – 216	150 (43.5 dB $\mu\text{V/m}$ )	3	
216 – 960	200 (46 dB $\mu\text{V/m}$ )	3	

### Result:

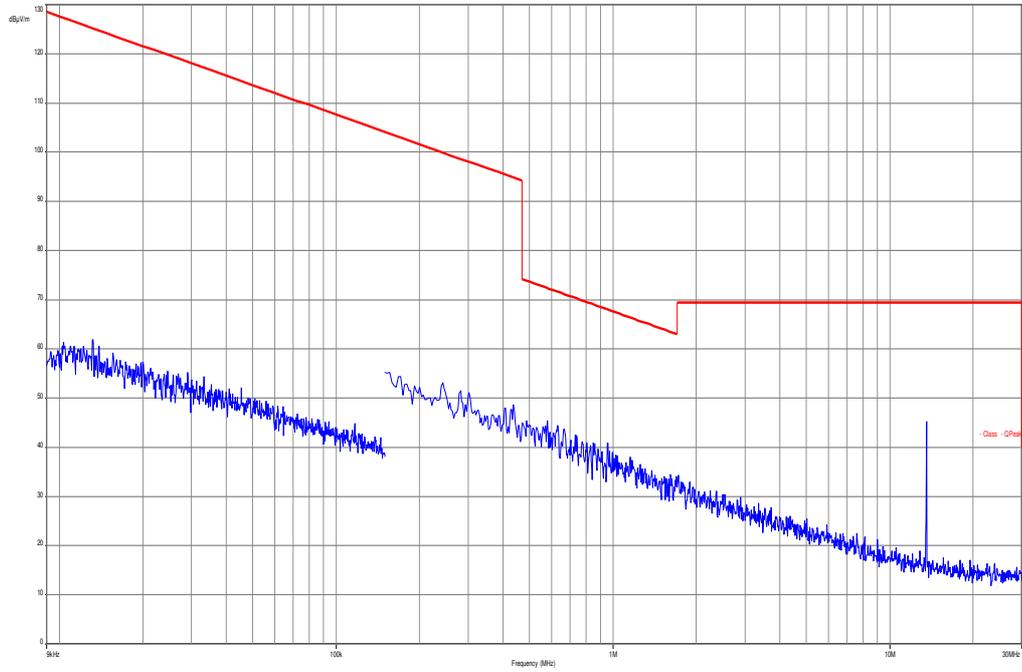
EMISSION LIMITATIONS				
f [MHz]	Detector	Limit max. allowed [dB $\mu\text{V/m}$ ]	Amplitude of emission [dB $\mu\text{V/m}$ ]	Results
No critical peaks detected!				

Result: **passed**

**Plots of the measurements**

**Plot 1:** 9 kHz – 30 MHz; Part 15.209 Magnetics, Measurement distance 3m

Transmit frequency 13.56 MHz



**Plot 2: 30 MHz – 1000 MHz**

Transmit frequency 13.56 MHz

**Common Information**

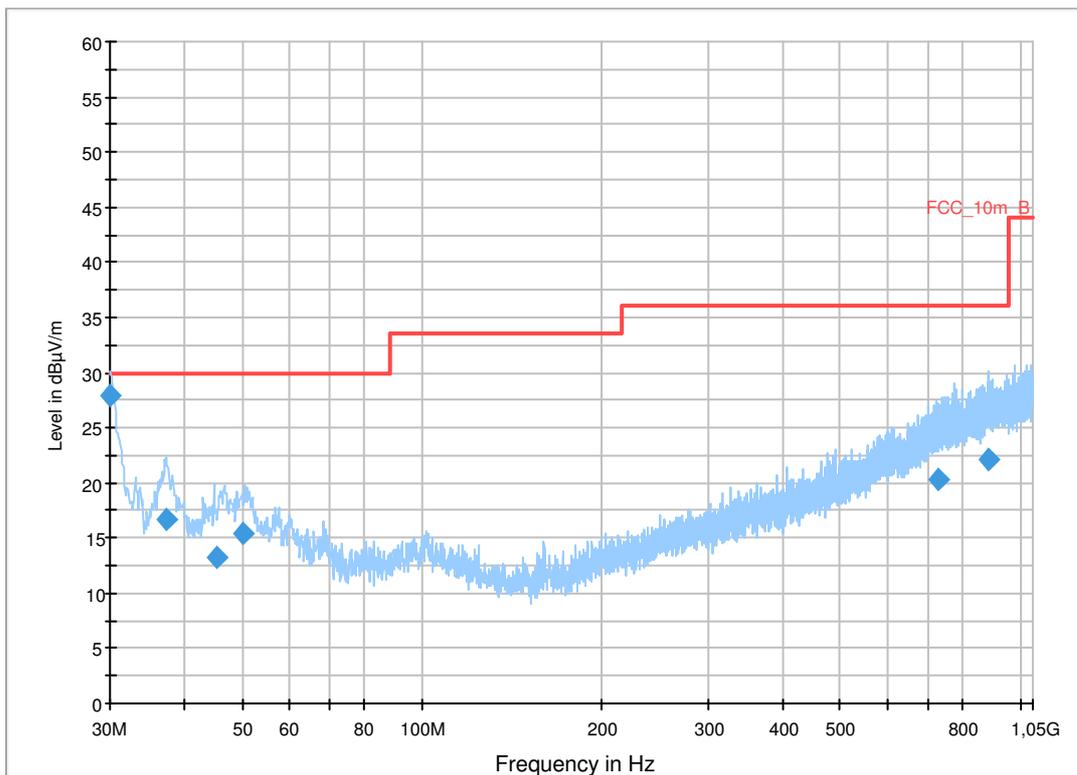
EUT: TM-0000-BV  
 Serial Number: CB5A1MD98W  
 Test Description: FCC part 15 C class B @ 10m  
 Operating Conditions: cont. RF ID polling + charging  
 Operator Name: Hennemann  
 Comment: AC: 115 V / 60 Hz

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: Electric Field (NOS)  
 Receiver: [ESC1 3]  
 Level Unit: dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

FCC\_10m(B)\_3



**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
30.093150	27.9	1000.0	120.000	121.0	V	272.0	12.5	2.1	30.0	
37.336050	16.6	1000.0	120.000	104.0	V	180.0	13.2	13.4	30.0	
45.371550	13.3	1000.0	120.000	122.0	V	175.0	13.3	16.7	30.0	
49.883250	15.4	1000.0	120.000	98.0	V	100.0	13.4	14.6	30.0	
726.368400	20.3	1000.0	120.000	170.0	V	261.0	23.1	15.7	36.0	
886.984050	22.2	1000.0	120.000	170.0	V	86.0	25.0	13.8	36.0	

## Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1

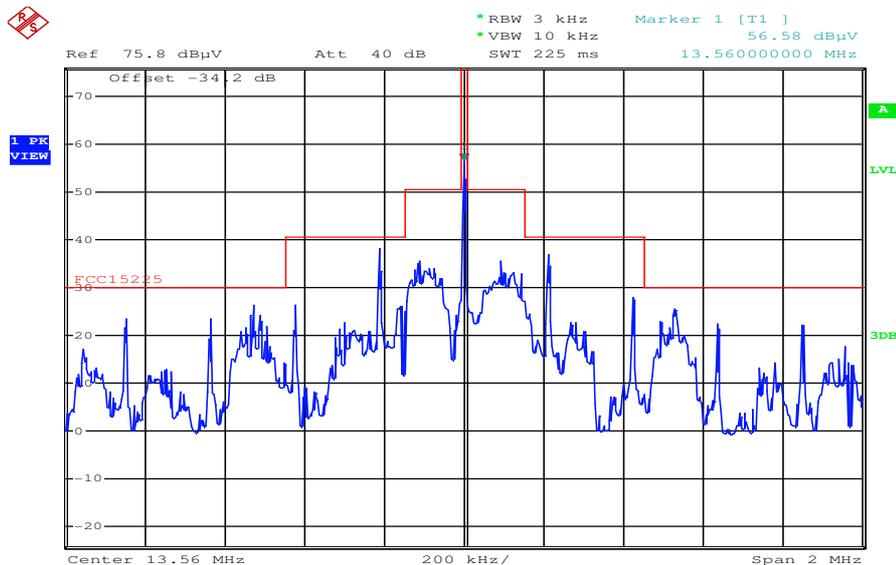
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table (vertical): Cable_EN_1GHz (1005) Correction Table (horizontal): Cable_EN_1GHz (1005)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.52

Plot 3: Spectrum mask part 15.225 (a, b, c, d)

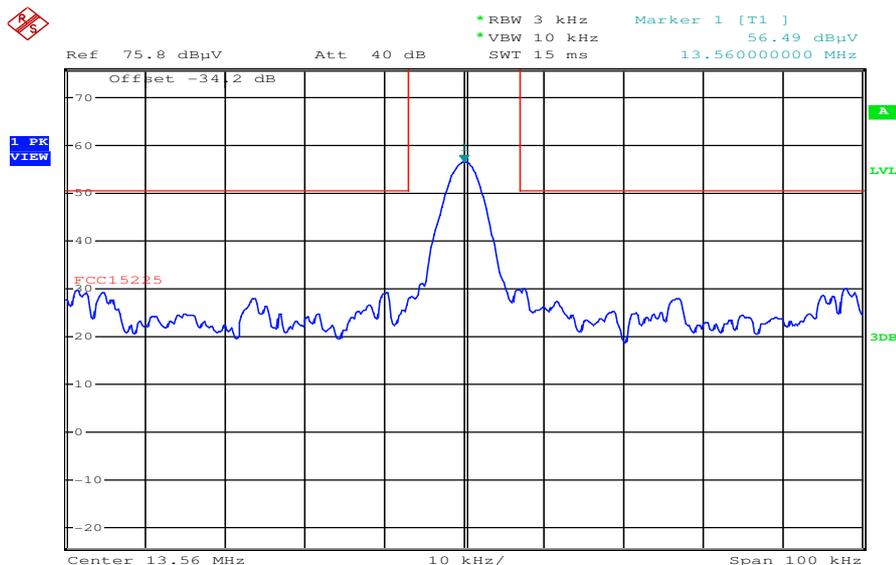
Limits recalculated from 30 m to 10 m with 40 dB/decade according to FCC 15.31 (f2)

Plot 1 spectrum mask



Date: 14.JAN.2013 14:10:17

Plot 2 spectrum mask zoomed



Date: 14.JAN.2013 14:08:41

The transmitter holds the requirements of FCC 15.225 (a, b, c and d)

## 9.5 Frequency tolerance

### Measurement:

Measurement parameter	
Detector:	Positive peak
Sweep time:	Auto
Resolution bandwidth:	10 Hz
Video bandwidth:	1 MHz
Span:	1 kHz
Trace-Mode:	Clear – write

### Limits:

FCC	IC
The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.	

### Result: **passed**

Frequency tolerance								
Over temperature variation			Over voltage variation					
Limit is +/- 1.356 kHz			Limit is +/- 1.356 kHz			-/-		
T (°C)]	Frequency	result	Power voltage	Frequency	result	F [MHz]	Detector	Level [µV/m]
-20°	13.560051	Pass	3.6 V	13.560017	Pass	-/-		
-10°	13.560076	Pass	3.7 V	13.560017	Pass			
0°	13.560080	Pass	3.8 V	13.560016	Pass			
10°	13.560053	Pass	3.9 V	13.560015	Pass			
20°	13.560006	Pass	4.0 V	13.560015	Pass			
30°	13.559917	Pass	4.1 V	13.560014	Pass			
40°	13.559862	Pass	4.2 V	13.560013	Pass			
50°	13.559807	Pass	4.3 V	13.560012	Pass			
55°	13.559802	Pass	4.4 V	13.560012	Pass			
Measurement uncertainty			±100 Hz					

## 9.6 AC line conducted

### Measurement:

Measurement parameter	
Detector:	Peak / Quasi peak / Average
Sweep time:	Auto
Resolution bandwidth:	F < 150 kHz: 200 Hz F > 150 kHz: 9 kHz
Video bandwidth:	F < 150 kHz: 1 kHz F > 150 kHz: 100 kHz
Span:	9 kHz to 30 MHz
Trace-Mode:	Max hold

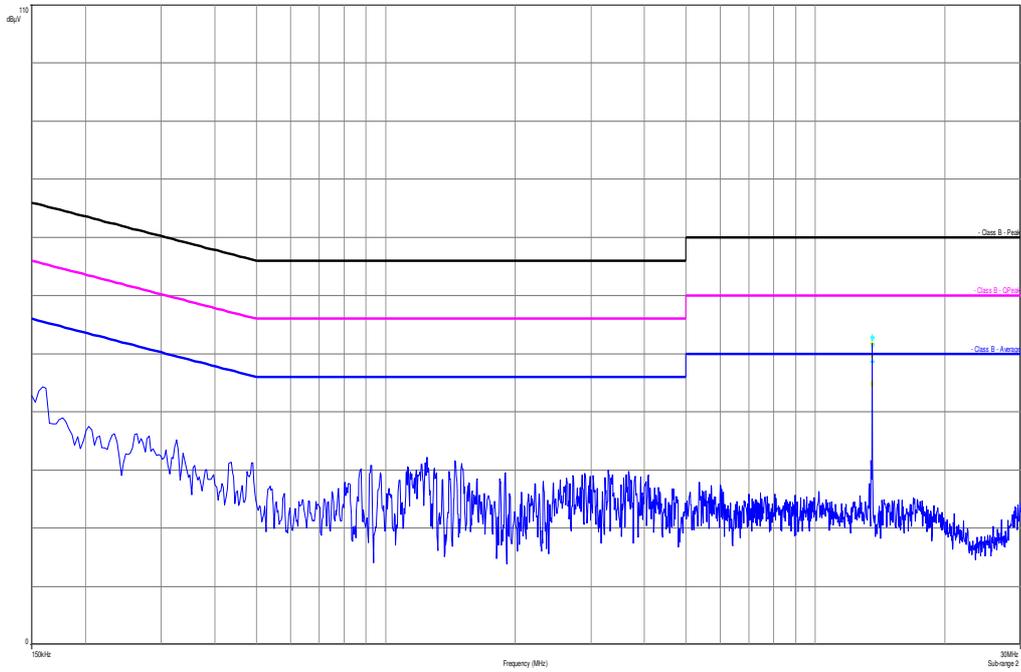
### Limits:

FCC	IC	
Frequency of Emission (MHz)	Conducted Limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56 *	56 to 46 *
0.5 – 5	56	46
5 - 30	60	50

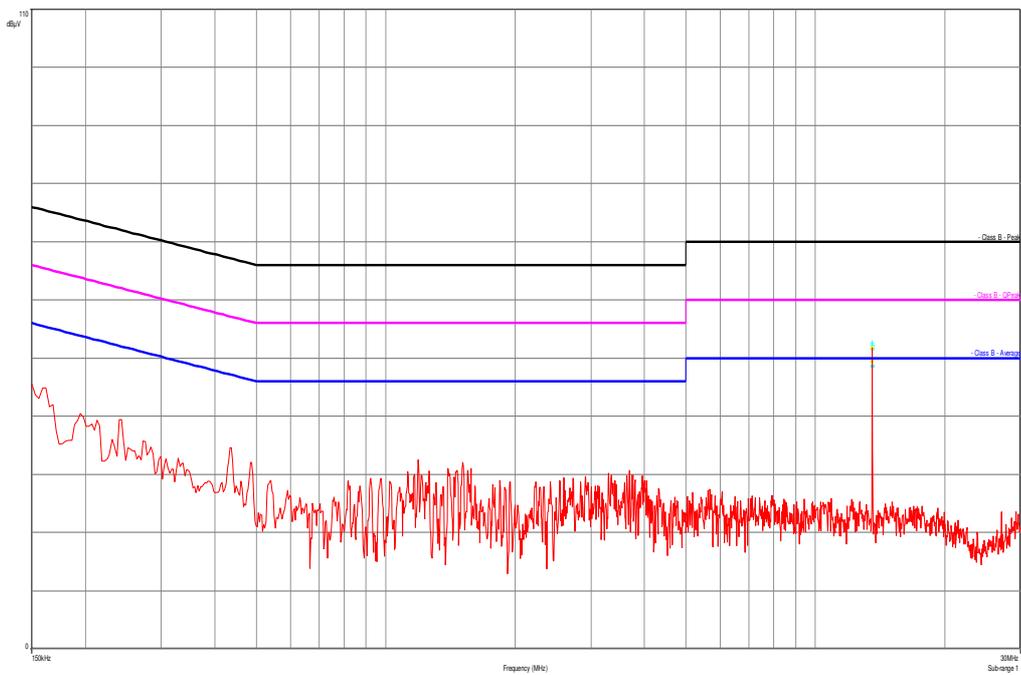
Result: **passed**

**Plots:**

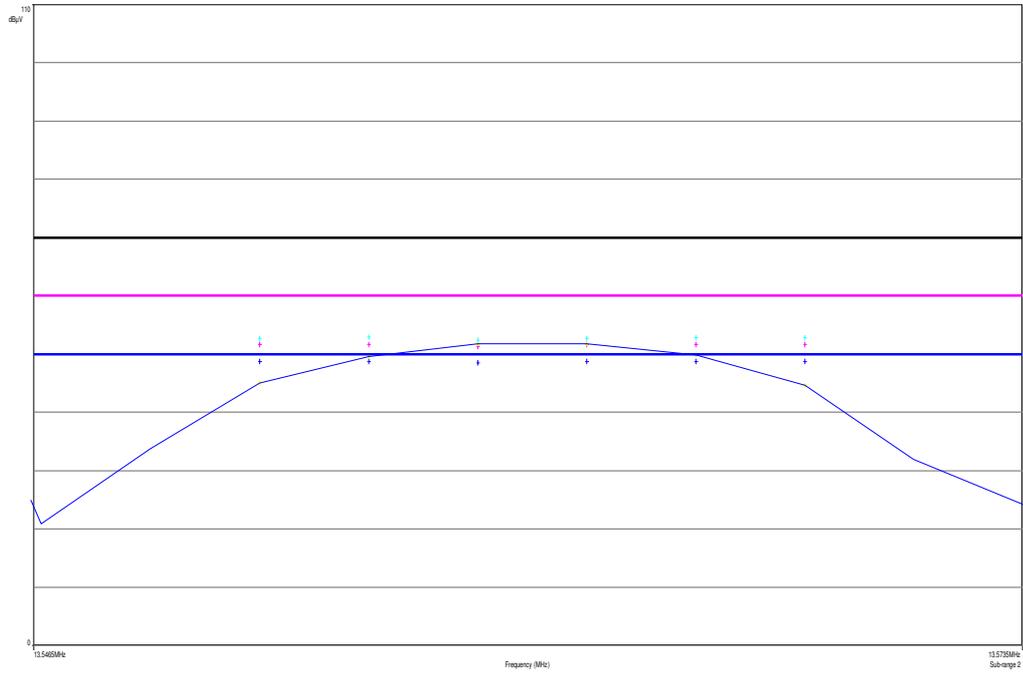
**Plot 1: phase line**



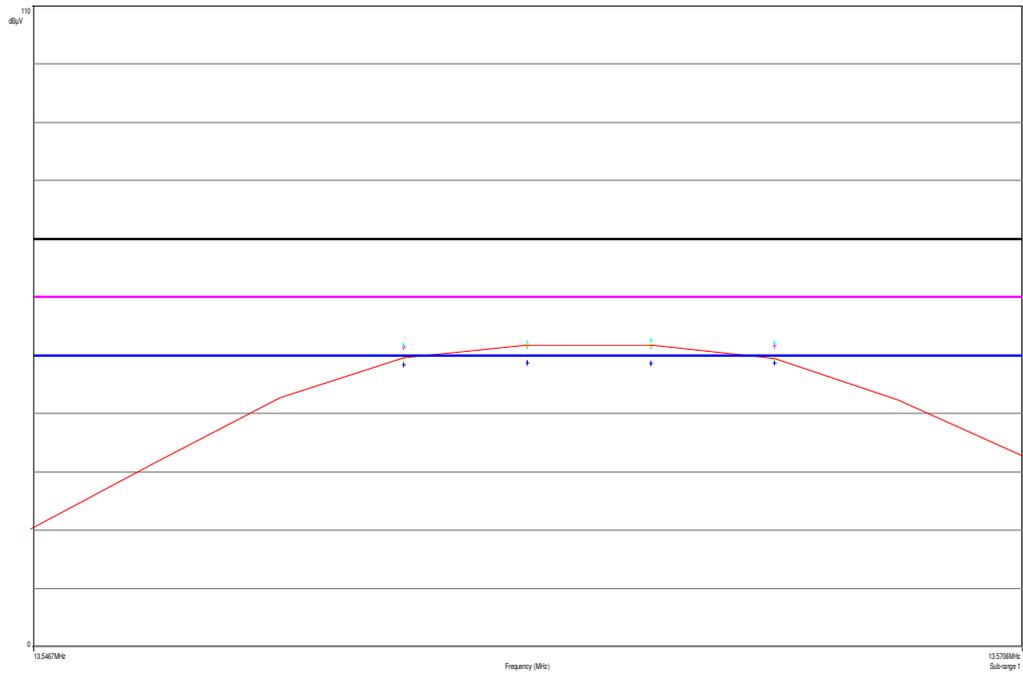
**Plot 2: neutral line**



Plot 3: phase line zoomed



Plot 4: neutral line zoomed



## 10 Test equipment and ancillaries used for tests

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rf-generating and signalling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Labor/Item).

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vKI!	11.05.2011	11.05.2013
2	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
3	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
4	n. a.	Switch / Control Unit	3488A	HP Meßtechnik	*	300000199	ne		
5	n. a.	Switch / Control Unit	3488A	HP Meßtechnik	2719A15013	300001156	ne		
6	9	Isolating Transformer	MPL IEC625 Bus Regeltrennravo	Erfi	91350	300001155	ne		
7	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
8	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
9	n. a.	Band Reject filter	WRCG1855/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
10	n. a.	Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
11	n. a.	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
12	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vKI!	14.10.2011	14.10.2014
13	n. a.	MXE EMI Receiver 20 Hz bis 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405	k	19.12.2011	19.01.2013
14	ECT-0002	Temperature and Climatic Test Chamber	VUK04/1500	Heraeus Voetsch	31098	300001507	ev	20.09.2011	20.09.2013
15	n. a.	Power Supply	LA30/5GA	Zentro Elektronik	2046	300000711	NK!		
16	n. a.	EMI Test Receiver 9 kHz - 3 GHz incl. Preselector	ESPI3	R&S	101713	300004059	k	22.08.2012	22.08.2013

### Agenda: Kind of Calibration

k calibration / calibrated  
 ne not required (k, ev, izw, zw not required)  
 ev periodic self verification  
 Ve long-term stability recognized  
 vKI! Attention: extended calibration interval  
 NK! Attention: not calibrated

EK limited calibration  
 zw cyclical maintenance (external cyclical maintenance)  
 izw internal cyclical maintenance  
 g blocked for accredited testing  
 \*) next calibration ordered / currently in progress

## 11 Observations

No observations exceeding those reported with the single test cases have been made.

**Annex D Document history**

Version	Applied changes	Date of release
1.0	Initial release	2013-01-18

**Annex E Further information****Glossary**

AVG	-	Average
DUT	-	Device under test
EMC	-	Electromagnetic Compatibility
EN	-	European Standard
EUT	-	Equipment under test
ETSI	-	European Telecommunications Standard Institute
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	Not applicable
PP	-	Positive peak
QP	-	Quasi peak
S/N	-	Serial number
SW	-	Software

**Annex F Accreditation Certificate**



Deutsche Akkreditierungsstelle GmbH  
German Accreditation Body

Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV  
Signatory to the Multilateral Agreements of EA, ILAC and IAF for Mutual Recognition

**Accreditation**



The Deutsche Akkreditierungsstelle GmbH (German Accreditation Body) attests that the testing laboratory

**CETECOM ICT Services GmbH**  
Untertürkheimer Straße 6-10  
66117 Saarbrücken

is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out tests in the following fields:

- Wired communications and DECT
- Acoustic
- Radio
- Shirt Range Devices (SRD)
- RFID
- WiMax and Richtfunk
- Mobile radio (GSM / DCS), Over the Air (OTA) Performance
- Electromagnetic Compatibility (EMC) incl. Automotive
- Product safety
- SAR and Hearing Aid Compatibility (HAC)
- Environmental simulation
- Smart Card Terminals
- Bluetooth
- Wi-Fi-Services

The accreditation certificate shall only apply in connection with the notice of accreditation of 13.04.2011 with the accreditation number D-PL-12076-01 and is valid until 03.09.2014. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 82 pages.

Registration number of the certificate: **D-PL-12076-01-01**

Frankfurt am Main, 13.04.2011

Dipl.-Ing. (FH) Ralf Egner  
Head of Division 2

This document is a translation. The definitive version is the original German accreditation certificate.  
See annex coverleaf

Front side of certificate

Deutsche Akkreditierungsstelle GmbH

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Spittelmarkt 10  
10117 Berlin

Office Frankfurt am Main  
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60594 Frankfurt am Main

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38116 Braunschweig

The publication of extracts of the accreditation certificate is subject to the prior written approval by Deutsche Akkreditierungsstelle GmbH (DAKKS). Exempted is the unchanged form of separate disseminations of the cover sheet by the conformity assessment body mentioned overleaf.

No impression shall be made that the accreditation also extends to fields beyond the scope of accreditation attested by DAKKS.

The accreditation was granted pursuant to the Act on the Accreditation Body (AkkStelleG) of 31 July 2009 (Federal Law Gazette I p. 2625) and the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products (Official Journal of the European Union L 218 of 9 July 2008, p. 30). DAKKS is a signatory to the Multilateral Agreements for Mutual Recognition of the European co-operation for Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation Cooperation (ILAC). The signatories to these agreements recognise each other's accreditations.

The up-to-date state of membership can be retrieved from the following websites:  
EA: [www.european-accreditation.org](http://www.european-accreditation.org)  
ILAC: [www.ilac.org](http://www.ilac.org)  
IAF: [www.iaf.nu](http://www.iaf.nu)

Back side of certificate

**Note:**

The current certificate including annex is published on our website (see link below) or may be received from CETECOM ICT Services on request.

[http://www.cetecom.com/fileadmin/de/CETECOM\\_D\\_Saarbruecken/accreditations\\_Jan\\_2010/DAKKS\\_Akkredi\\_Urk\\_EN17025-En\\_incl\\_Annex.pdf](http://www.cetecom.com/fileadmin/de/CETECOM_D_Saarbruecken/accreditations_Jan_2010/DAKKS_Akkredi_Urk_EN17025-En_incl_Annex.pdf)